

**Department of Mechanical and Aerospace Engineering**  
**Approved "In Department" Technical Electives**

Course	Name	Requisites: PreReq, (CoReq)	Aerospace	Mechanical		Offered	Credits
			Catalog Years				
			2012 - 2019	2012	2013 - 2019		
BME 3211	Engineering Biomechanics	EGN 3310, EGN 3321, EGM 3601	√	√	√	FA	3(3,0)
BME 3891	Intro. to Rehab Engineering	EGN 3310, EGN 3321	√	√	√	SP	3(3,0)
EAS 3101	Fundamentals of Aerodynamics	EML 3701	R	√	√	SP	3(3,0)
EAS 3530	Space Systems Concepts	EGN 3321, PHY 2049C, MAP 2302	√	√	√	SP	3(3,0)
EAS 4105	Flight Mechanics	EAS 3101, (EML 4225)	R	√	√	FA	3(3,0)
EAS 4134	High-Speed Aerodynamics	EAS 3101	R	--	--	FA	3(3,0)
EAS 4200	Analysis and Design of Aero. Structures	EGM 3601	R	√	√	FA	3(3,0)
EAS 4300	Aerothermodynamics of Prop. Systems	EAS 4134/ EML 4703	R	√	√	SP	3(3,0)
EAS 4400	Spacecraft Attitude Dynamics	EML 4225	√	√	√	Occasional	3(3,0)
EAS 4404C	Discrete Control in Aerospace Vehicles	EML 4313, EAS 3800C, EML 4225	√	--	--	Occasional	3(2,3)
EAS 4505	Orbital Mechanics	EGN 3321, MAC 2311, MAC 2312, MAC 2312, MAP2302, PHY 2048	√	√	√	SP	3(3,0)
EAS 4703	Small Satellite Payloads and Integration	EML 3303C/ EAS 3800C	√	√	√	FA	3(3,0)
EML 3101	Thermodynamics of Mechanical Systems	EGN 3343, MAC 2311C, MAC 2312, MAC 2313, MAP 2302, PHY 2048	√	R - ES	√*	SP	3(3,0)
EML 3262	Kinematics of Mechanisms	EGN 3321, MAC 2311, MAC 2312, MAC 2312, MAP2302, PHY 2048	√	√	√	FA	3(3,0)
EML 3500	Machine Design I	EGM 3601	√	R - MS	R	FA/SP	3(3,0)
EML 3811C	Mechatronics	EGN 3373 or EEE 3307C or C.I	√	√	√	FA	3(2,2)
EML 4024C	Engineering Design Practice (Solidworks)	EML 3022C	√	√	√	FA/SP	3(2,2)
EML 4143	Heat Transfer II	EML 4142	√	R - ES	√*	FA	3(3,0)
EML 4260	Dynamics of Machinery	EGN 3321, EML 4225	√	√	√	Occasional	3(3,0)
EML 4264	Vehicle Dynamics	EGN 3321, EML 4225	√	√	√	Occasional	3(3,0)
EML 4313	Intermediate System Dynamics & Controls	EGN 3321, MAP 2302, EGN 3373, EML 4225	√	R - MS	√*	FA	3(3,0)
EML 4327	Digital Manufacturing	EGM 3601	√	√	√	FA	3(3,0)
EML 4411	Mechanical Power Systems	EGN 3343, (EML 3101)	√	√	√	Occasional	3(3,0)
EML 4454	Turbines for Sustainable Power	EGM 3601, EGN 3365 or EMA 3706, EML 3701, (EML 4142)	√	√	√	FA	3(3,0)
EML 4504	Machine Design II	EML 3500	√	√	√*	SP	3(3,0)
EML 3022C	Introduction to Computer Aided Engineering	EGN 3310	√	√	√	FA/SP	3(2,3)
EML 4600	HVAC Systems Engineering I	EGN 3343	√	√	√	FA	3(3,0)
EML 4602	Applied HVAC Systems Engineering II	EGN 3343, (EML 4142)	√	√	√	SP	3(3,0)
EML 4703	Fluid Mechanics II	EML 3701	--	R - ES	√*	FA	3(3,0)
EML 4804C	Digital Control in Mechatronics	EML 4313, EML 3303C, EML 4225	--	√	√	Occasional	3(3,0)
EML 4932	ST: Manufacturing Proc. For Mech. Comp.	EGN 3365 or EMA 3706	√	√	√	SP	3(3,0)

**“C” (2.0) or better is required in all Prerequisite courses. Please verify your catalog year with your Academic Advisor before selecting technical electives.**

**KEY:**

"√": Acceptable for the major

"R": Required Courses

R - MS: Required for Mechanical Systems

"--": Not Acceptable for the major

√\*: Acceptable as Technical Elective **ONLY** if the Select 2 of 5 section is satisfied.

R - ES: Required for Energy Systems

**Department of Mechanical and Aerospace Engineering Approved Graduate Technical Electives**

<b>Course</b>	<b>Name</b>	<b>Requisites: PreReq, (CoReq)</b>	<b>All MAE Majors</b>	<b>Offered</b>	<b>Credits</b>
BME 5216	Mechanics of Biostructures I	Graduate Status/ C.I.	√	FA	3(3,2)
BME 5217C	Mechanics of Biostructures II	EML 5587C	√	SP	3(3,2)
BME 5760	Biofluid Mechanics	MAP 2302, EML 3701, EML 4703	√	FA	3(3,0)
BME 5671	Applied Computational Biofluids	EML 4304C, EML 4703	√	SP	3(3,2)
EAS 5123	Intermediate Aerodynamics	EAS 4143, (EML 5060)	√	Occasional	3(3,0)
EAS 5157	V/Stol Aerodynamics and Performance	EAS 4105, (EML 5060)	√	Occasional	3(3,0)
EAS 5211	Aeroelasticity	EAS 3101/EML 3701, EAS 4210/EML 4220	√	Occasional	3(3,0)
EAS 5315	Rocket Propulsion	EAS 4134/ EML 4703	√	Occasional	3(3,0)
EEE 5332C	Thin Film Technology	EEE 3350/ Equivalent	√	Occasional	3(2,1)
EEE 5352C	Semiconductor Material & Device Charac	EEE 3350/ C.I.	√	Odd FA	3(2,3)
EEE 5353	Semiconductor Device Modeling & Simulation	EEE 3307C	√	SP	3(3,0)
EEE 5356C	Fabrication of Solid-State Devices	EEE 3350	√	FA/ SP	4(3,3)
EEE 5378	CMOS Analog and Digital Circuit Design	EEE 4309C	√	FA	3(3,0)
EEE 5390C	Full-Custom VLSI Design	EEE 3307C, EEE 3342C	√	Occasional	3(2,3)
EEE 5513	Digital Signal Processing Applications	EEL 4750	√	SP	3(3,0)
EEE 5542	Random Processes I	EEL 3552C, STA 3032	√	FA/ SP	3(3,0)
EEE 5557	Introduction to Radar Systems	EEL 3552C	√	SP	3(3,0)
EEL 5173	Linear Systems Theory	EEL 3657	√	SP	3(3,0)
EEL 5245C	Power Electronics	EEE 4309C	√	FA	3(3,0)
EEL 5432	Satellite Remote Sensing	EEL 3470/ PHY 4324	√	Occasional	3(3,0)
EEL 5437C	Microwave Engineering	EEL 3470/ C.I.	√	FA	4(3,3)
EEL 5462C	Antenna Analysis and Design	EEL 3470/ Equivalent	√	Odd FA	3(3,1)
EEL 5630	Digital Control Systems	EEL 3657	√	FA	3(3,0)
EEL 5669	Autonomous Robotic Systems	EEL 3657/ C.I.	√	Odd FA	3(3,0)
EEL 5722C	Field-Programmable Gate Array (FPGA) Dsgn	EEE 3342C	√	Even FA	3(3,3)
EMA 5060	Polymer Science and Engineering	EGN 3365	√	Occasional	3(3,0)
EMA 5104	Intermediate Structures & Prop. of Matls	EGN 3365	√	FA	3(3,0)
EMA 5106	Metallurgical Thermodynamics	EGN 3365	√	Occasional	3(3,0)
EMA 5140	Introduction to Ceramic Materials	EGN 3365	√	Occasional	3(3,0)
EMA 5317	Materials Kinetics	C.I.	√	Occasional	3(3,0)
EMA 5326	Corrosion Science and Engineering	EGN 3365	√	Occasional	3(3,0)
EMA 5584	Biomaterials	EGN 3365	√	Even SP	3(3,0)
EMA 5610	Laser Materials Processing	EGN 3343/ EMA 5106 / C.I.	√	Occasional	3(3,0)
EML 5060	Mathematical Methods in MAE	MAP 2302	√	FA	3(3,0)
EML 5066	Computational Methods in MAE	EML 3034C	√	Occasional	3(3,0)
EML 5152	Intermediate Heat Transfer	EML 4142, EML 5060	√	Occasional	3(3,0)
EML5228C	Modal Analysis	EML 3303C, EML 4200, EML 5060	√	Occasional	3(3,0)
EML 5237	Intermediate Mechanics of Materials	EML 3500/ EAS 4200, EML 5060	√	FA	3(3,0)
EML 5271	Intermediate Dynamics	EGN 3321/ EML 3217	√	Occasional	3(3,0)
EML 5290	Introduction to MEMS and Micromachining	Graduate Status/ C.I.	√	Odd FA	3(3,0)
EML 5291	MEMS Materials	EML 5060, EML 6211/ C.I.	√	Even SP	3(3,0)
EML 5311	System Control	EML 4312C, (EML 5060)	√	Occasional	3(3,0)
EML 5402	Turbomachinery	EML3101, EML 4703/ EAS 4134	√	Occasional	3(3,0)
EML 5456	Turbines for Sustainable Power	EGM 3601, EGN 3365, EML 3701 (EML 4142)	√	FA	3(3,0)
EML 5546	Engineering Design with Composite Materials	EML 5237	√	Occasional	3(3,0)
EML 5713	Intermediate Fluid Mechanics	EML 4703, (EML 5060)	√	Occasional	3(3,0)

**Graduate Tuition and Fees will apply (GPA ≥ 3.0 Required)**

**Undergraduate Students will need an Override in order to enroll in these courses**

**Approval for courses not listed on this list must be obtained from the department associate chair.**

Updated on 12/8/2021